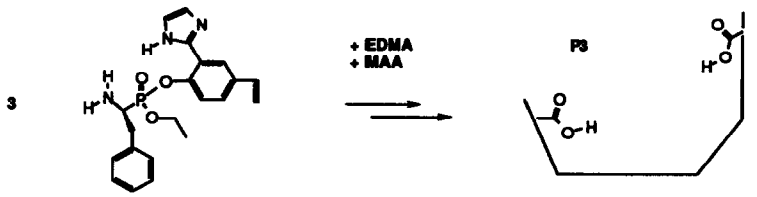
GRAPHICAL ABSTRACTS

Enantioselective Ester Hydrolysis Catalyzed by Imprinted Polymers

Tetrahedron: Asymmetry **1994,** *5,* 1403

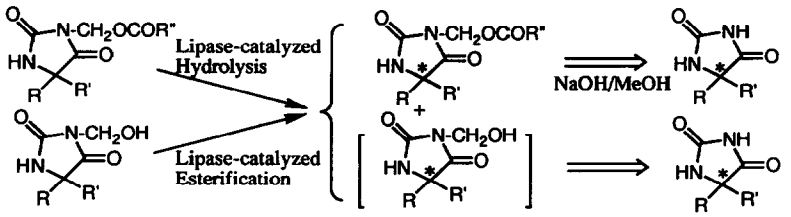
Börje Sellergren† and Kenneth J. Shea*
†Department of Analytical Chemistry, University of Lund, S-22100 Lund, Sweden.
*Department of Chemistry, University of California, Irvine, California 92717-2025.



Lipase-catalyzed Resolution of 5,5-Disubstituted Hydantoin

Tetrahedron: Asymmetry **1994,** *5,* 1407

Eisaku Mizuguchi[a], Kazuo Achiwa*[a], Hideaki Wakamatsu[b] and Yoshiyasu Terao*[b]
School of Pharmaceutical Sciences[a], and School of Nutritional & Environmental Sciences[b], University of Shizuoka, 52-1 Yada, Shizuoka 422, Japan

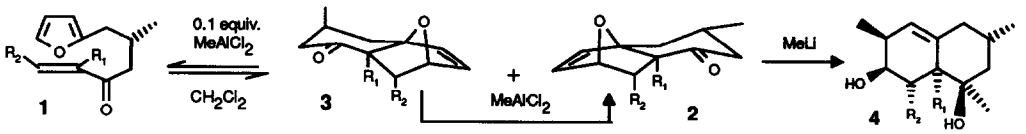


THERMODYNAMICALLY CONTROLLED ASYMMETRIC INDUCTION: APPLICATIONS WITH THE INTRAMOLECULAR DIELS-ALDER REACTION INVOLVING A FURAN DIENE

Tetrahedron: Asymmetry **1994,** *5,* 1411

Simon Woo and Brian A. Keay*
Department of Chemistry, University of Calgary, Calgary, Alberta, Canada, T2N 1N4

The IMDAF reaction of chiral percursors **1** (>99% e.e.) with $MeAlCl_2$ provides cycloadducts **2** and **3** with high e.e.'s. The minor isomers **3** can be further equilibrated to cycloadducts **2** and hence transformed into diol **4** with MeLi.

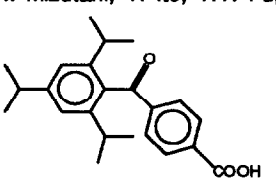


IONIC CHIRAL HANDLE-INDUCED ASYMMETRIC SYNTHESIS IN A SOLID STATE NORRISH TYPE II PHOTOREACTION

Tetrahedron: Asymmetry **1994,** *5,* 1415

H. Koshima, A. Maeda, N. Masuda, T. Matsuura, K. Hirotsu, K. Okada, H. Mizutani, Y. Ito, T.Y. Fu, J.R. Scheffer and J. Trotter, Department of Materials Chemistry, Ryukoku University, Seta, Otsu 520, Japan and Department of Chemistry, University of British Columbia, Vancouver, Canada V6T 1Z1

Irradiation of crystals of salts formed between 4-(2,4,6-triisopropylbenzoyl)benzoic acid and various optically active amines is shown to lead to optically active Norrish type II photoproducts.

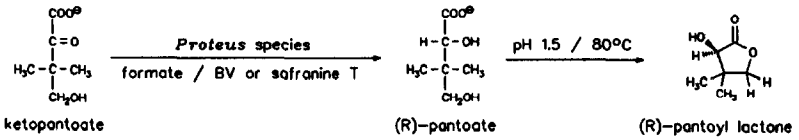


Tetrahedron: Asymmetry **1994,** *5,* 1419

Synthesis of (R)-Pantoyl Lactone by Reduction of Ketopantoate with Formate and *Proteus* Species.

Richard Eck and Helmut Simon

Lehrstuhl für Organische Chemie und Biochemie, Technische Universität München, Lichtenbergstraße 4, D-85747 Garching, Federal Republic of Germany.



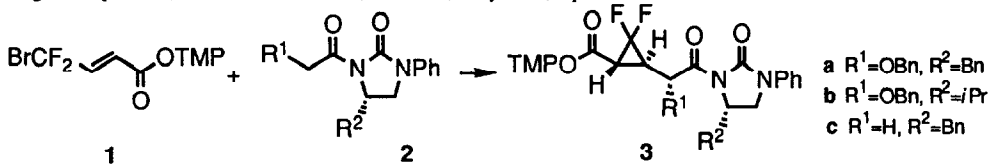
Tetrahedron: Asymmetry **1994,** *5,* 1423

ASYMMETRIC SYNTHESIS OF DIFLUOROCYCLOPROPANES

Takeo Taguchi,[a*] Akira Shibuya,[a] Hirofumi Sasaki,[a] Jun-ichi Endo,[a] Tsutomu Morikawa,[a] and Motoo Shiro[b]

[a] Tokyo College of Pharmacy, 1432-1 Horinouchi, Hachioji, Tokyo 192-03, Japan

[b] Rigaku corporation, 3-9-12 Matsubara-cho, Akishima, Tokyo 196, Japan



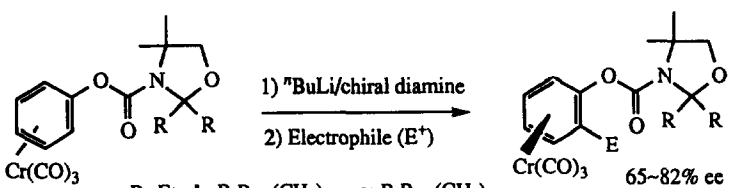
1 2 3

Tetrahedron: Asymmetry **1994,** *5,* 1427

Enantioselective Ortho Lithiation of Tricarbonyl(Masked Phenol and Aniline)Chromium Complexes

M. Uemura,* Y. Hayashi, Y. Hayashi

Faculty of Science, Osaka City University, Sugimoto, Sumiyoshi, Osaka 558, Japan

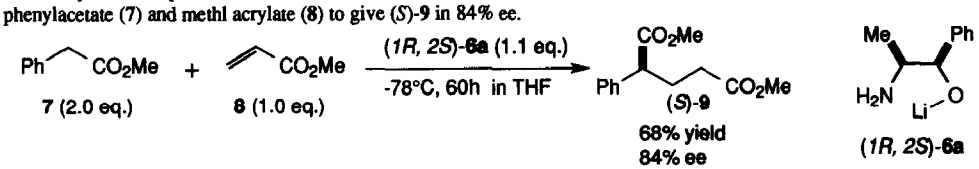


a; R=Et, b; R,R=-$(CH_2)_4$-, c; R,R=-$(CH_2)_5$-

Tetrahedron: Asymmetry **1994,** *5,* 1431

CHIRAL LITHIUM 2-AMINOALKOXIDES AS REAGENTS FOR ENANTIOSELECTIVE MICHAEL REACTION

Takuya Kumamoto, Shin Aoki, Makoto Nakajima, and Kenji Koga*, Faculty of Pharmaceutical Sciences, University of Tokyo, Hongo, Bunkyo-ku, Tokyo, 113, Japan. The chiral lithium 2-aminoalkoxide (*1R, 2S*)-**6a** was applied for enantioselective Michael reaction of methyl phenylacetate (**7**) and methl acrylate (**8**) to give (*S*)-**9** in 84% ee.

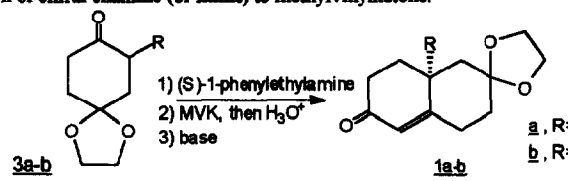


ENANTIOSELECTIVE SYNTHESIS OF SUBSTITUTED OCTALONES

Tetrahedron: Asymmetry **1994,** *5,* 1433

Lúcia C. Sequeira, Paulo R R. Costa*, Alexandre Neves and Pierre Esteves
Núcleo de Pesquisas de Produtos Naturais- Universidade Federal do Rio de Janeiro - Cidade Universitária (CCS, Bloco H), Rio de Jan., RJ, Brasil.

This work describe the preparation of optically active octalones 1a-b from cyclanones 3a-b , via an asymmetric Michael addition of chiral enamine (or imine) to methylvinylketone.



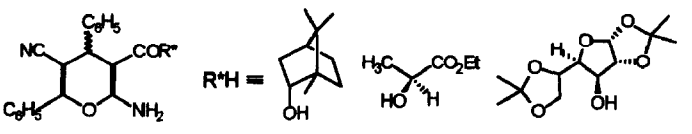
a , R= CO_2Et $[\alpha]_D$= -108
b , R= CH_3 $[\alpha]_D$ = -171

ASYMMETRIC SYNTHESIS OF 3-ALKOXYCARBONYL-2-AMINO-5-CYANO-4,6-DIPHENYL-*4H*-PYRANS

Tetrahedron: Asymmetry **1994,** *5,* 1435

N. Martín,[a,*] A. Martínez-Grau,[a] C. Seoane,[a,*] J.L. Marco,[b,*] A. Albert,[c] F.H. Cano.[c] *a) Departamento de Química Orgánica, Facultad de Química, U. Complutense, 28040-Madrid, Spain. b) Instituto de Química Orgánica, Juan de la Cierva 3, 28006-Madrid, Spain. c) Departamento de Cristalografía, Instituto de Química Física Rocasolano (CSIC), Serrano 119, 28006-Madrid, Spain.*

The asymmetric synthesis of 2-amino-4*H*-pyrans 3a-c is reported.

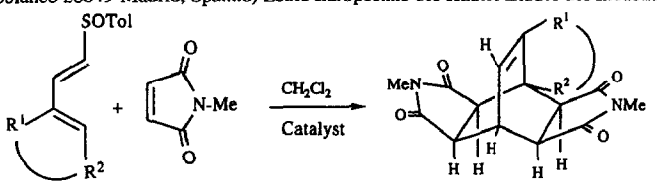


3a-c **1a** **1b** **1c**

DIELS-ALDER REACTIONS OF 1-SULFINYLDIENES WITH AN ENDOCYCLIC DOUBLE BOND: THE UNEXPECTED EVOLUTION OF N-METHYLMALEIMIDE ADDUCTS.

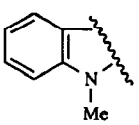
Tetrahedron: Asymmetry **1994,** *5,* 1439

M.C. Carreño*[a], M.B. Cid[a], F. Colobert[b], J.L. García Ruano*[a] and G. Solladié[b]. a) Dpto. de Química (C-I). Universidad Autónoma, Cantoblanco 28049-Madrid, Spain.b) Ecole Européenne des Hautes Etudes des Industries Chimiques, 67008-Strasbourg, France.



a $R^1, R^2 = (CH_2)_4$

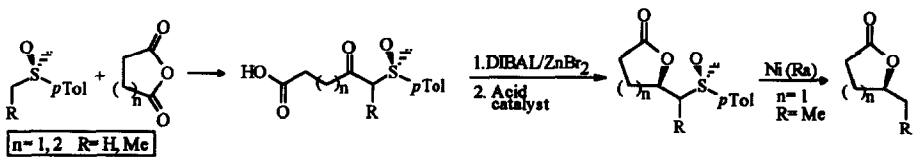
b R^1, R^2=



ENANTIOSELECTIVE SYNTHESIS OF γ- AND δ-LACTONES

Tetrahedron: Asymmetry **1994,** *5,* 1443

José L. García Ruano,* Araceli Fuerte, M. Carmen Maestro*
Departamento de Química (C-I), Universidad Autónoma, 28049-Madrid, Spain



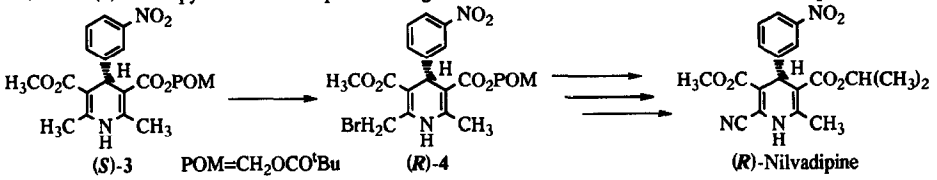
The stereoselective DIBAL/ $ZnBr_2$ reduction of ketosulfoxides obtained from anhydride opening, after in situ treatment with acid catalyst (Amberlyst-15 or *p*TsOH), affords the corresponding sulfinyl lactones in good yield and ed ranging from 88 to 98 %.

Tetrahedron: Asymmetry **1994,** *5,* 1447

Lipase-catalyzed Asymmetric Hydrolysis and Regioselective Bromination of 1,4-Dihydropyridine. Synthesis of (*R*)-(+)-Nilvadipine.

Hirosato Ebiike and Kazuo Achiwa School of Pharmaceutical Sciences, University of Shizuoka 52-1 Yada, Shizuoka 422, Japan.

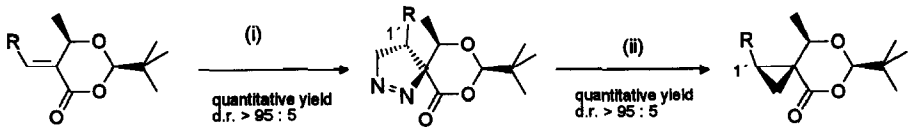
Bromination of (*S*)-3 with pyridinium bromoperbromide gave (*R*)-4, which was converted into (*R*)-nilvadipine.



Tetrahedron: Asymmetry **1994,** *5,* 1451

Enantioselective Synthesis of Hydroxyalkylcyclopropanecarboxylic Acid Derivatives

Annett Bartels, Jürgen Liebscher*
Fachbereich Chemie, Humboldt-Universität Berlin, Hessische Str. 1-2, D-10115 Berlin, Germany



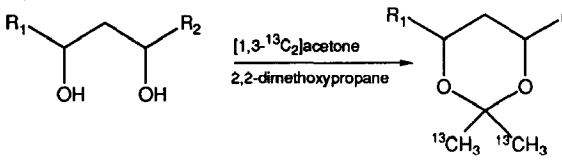
(2R, 6R)-1 (2R, 5S, 6R, 1´R)-2 (2R, 5R, 6R,1´R)- 3

(i) CH_2N_2/Et_2O, 0°C, 12h; (ii) MeCN, hv (330 nm), 12h

Tetrahedron: Asymmetry **1994,** *5,* 1453

IMPROVED METHOD FOR THE ASSIGNMENT OF THE RELATIVE CONFIGURATION OF 1,3-DIOLS, BY USING ^{13}C-ENRICHED ACETONIDES.

A. Trincone[a], A. Gambacorta[a], A. Soriente[b] and G.Sodano[b]*
Istituto per la Chimica MIB CNR Via Toiano, 6 80072 Arco Felice (NA) Italy
Dipartimento di Fisica, Università di Salerno, 89081 Baronissi (SA) Italy



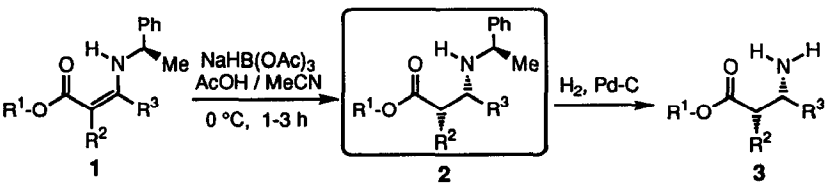
A facile preparation of ^{13}C-enriched acetonides for the determination of the relative stereochemistry of 1,3-diols is described. The method allows *inter alia* the detection of minor diastereomers arising from the synthesis of 1,3-diols.

Tetrahedron: Asymmetry **1994,** *5,* 1455

Diastereo- and Enantioselective Entry to β-Amino Esters by Hydride Reduction of Homochiral β-Enamino Esters.

Giuseppe Bartoli, Cristina Cimarelli and Gianni Palmieri *
Dip. Scienze Chimiche, via S. Agostino 1, 62032 Camerino - Italy

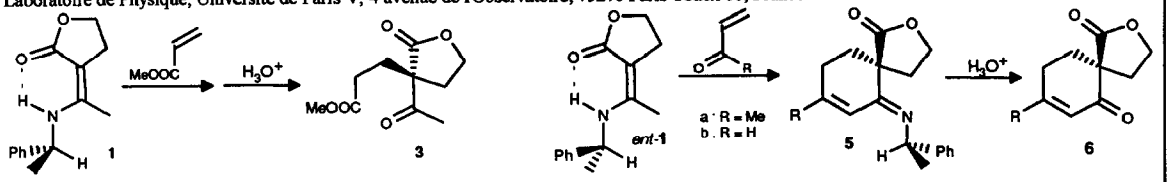
The reduction of homochiral β-enamino esters **1** with sodium triacetoxyborohydride occurs with good diastereo- and enantioselectivity in the β-amino esters **2**.



Tetrahedron: Asymmetry **1994,** *5,* 1459

Enantioselective Michael-type Reaction of Chiral Linear α,α-Disubstituted Secondary Enamines

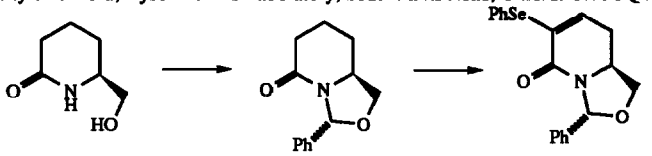
Anasse Felk[a], Gilbert Revial[a], Bernard Viossat[b], Pascale Lemoine[b], and Michel Pfau[*a]
[a] Laboratoire de Chimie Organique associé au CNRS (UA 476), ESPCI, 10 rue Vauquelin, 75231 Paris Cedex 05, France
[b] Laboratoire de Physique, Université de Paris V, 4 avenue de l'Observatoire, 75270 Paris Cedex 06, France



Tetrahedron: Asymmetry **1994,** *5,* 1463

A SHORT APPROACH TO FUNCTIONALISED HOMOCHIRAL PIPERIDINONES

Stephen A. Hermitage and Mark G. Moloney
The University of Oxford, Dyson Perrins Laboratory, South Parks Road, Oxford. OX1 3QY

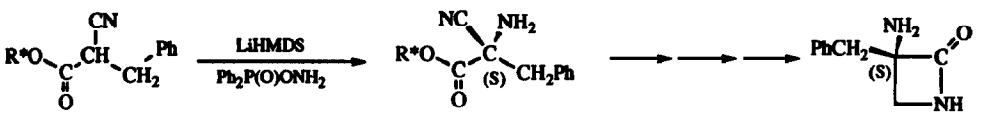


Tetrahedron: Asymmetry **1994,** *5,* 1465

STEREOSELECTIVE AMINATION OF CHIRAL ENOLATES: SYNTHESIS OF CHIRAL KEY INTERMEDIATES FOR β-LACTAM ANTIBIOTICS

Carlos Cativiela*, María D. Díaz-de-Villegas and José A.Gálvez, ***Instituto de Ciencia de Materiales de Aragón. Departamento de Química Orgánica. Universidad de Zaragoza-CSIC. 50009 Zaragoza. Spain.***

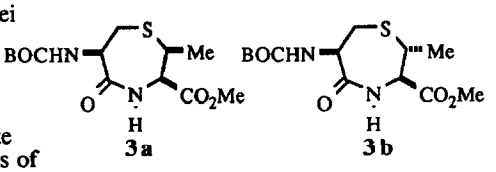
A new synthetic approach to valuable chiral intermediates for the synthesis of enantiomerically pure 2-azetidinones from readily available starting materials is described.



Tetrahedron: Asymmetry **1994,** *5,* 1469

Cyclic Dipeptides. A Stereocontrolled Synthesis of (2S,3R,6R)- and (2R,3R,6R)-6-*tert*-Butoxycarbonylamino-3-methoxycarbonyl-2-methyl-5-oxoperhydro-1,4-thiazepine.

Federico Corelli*, Angela Crescenza, Donata Dei, Maurizio Taddei and Maurizio Botta*
Dipartimento Farmaco Chimico Tecnologico
Banchi di Sotto 55 - 53100 Siena (Italy).



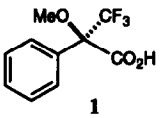
A stereoselective synthesis of **3a** and **3b** is described. The absolute stereochemistry of these compounds has been deduced on the basis of NMR, computational and chemical degradation studies.

Tetrahedron: Asymmetry **1994**, *5*, 1473

A Short Route to a Mosher's Acid Precursor Via Catalytic Asymmetric Dihydroxylation *(AD)*

Youssef L. Bennani, Koen P.M. Vanhessche and K. Barry Sharpless*
Department of Chemistry, The Scripps Research Institute,
10666 N. Torrey Pines Road, La Jolla, CA 92037, U.S.A.

Asymmetric dihydroxylation (AD) of α-trifluoromethyl styrene followed by air oxidation gives, in good yield and high enantiomeric excess (ee), α-hydroxy-α-trifluoromethyl phenylacetic acid, a precursor to Mosher's Acid (MTPA)(1).

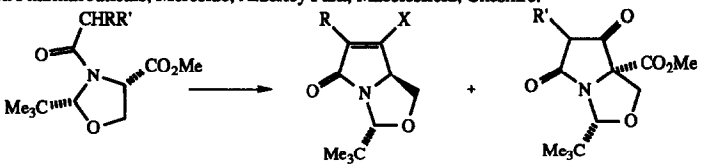


1

Tetrahedron: Asymmetry **1994**, *5*, 1477

A CONCISE APPROACH TO FUNCTIONALISED HOMOCHIRAL TETRAMIC ACIDS

Mark D. Andrews[a], Andrew Brewster[b], and Mark G. Moloney[a]
[a] The University of Oxford, Dyson Perrins Laboratory, South Parks Road, Oxford.
[b] Zeneca Pharmaceuticals, Mereside, Alderley Park, Macclesfield, Cheshire.

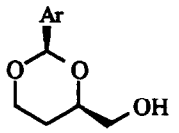


Tetrahedron: Asymmetry **1994**, *5*, 1479

BIOCATALYTIC SYNTHESIS OF CHIRAL POLYOXYGENATED COMPOUNDS: MODULATION OF THE SELECTIVITY UPON CHANGES IN THE EXPERIMENTAL CONDITIONS

Bernardo Herradón and Serafín Valverde. Instituto de Química Orgánica General, C. S. I. C., c/ Juan de la Cierva 3, 28006 Madrid, Spain.

A comprehensive study on the influence of some experimental variables on the PFL-catalyzed resolution of (±)-**1** is reported. The enantioselectivity of the process is dependent on some properties of the solvent.



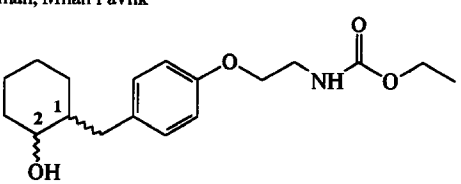
(±)-1

Tetrahedron: Asymmetry **1994**, *5*, 1501

CHIRAL JUVENOIDS DERIVED FROM 2-SUBSTITUTED CYCLOHEXANOLS

Martin Rejzek*, Zdeněk Wimmer*, Marie Zarevúcka, David Šaman, Milan Pavlík and Michaela Říčánková
Institute of Organic Chemistry and Biochemistry,
Academy of Sciences of the Czech Republic,
Flemingovo náměstí 2, CZ-166 10 Prague 6, Czech Republic

Chiral juvenoids **1d - 4d** were synthesized using a chemo-enzymatic process of transformation of convenient substrates. Biological activity of **1d - 4d** in tests with the *Tenebrio molitor* pupae was studied.

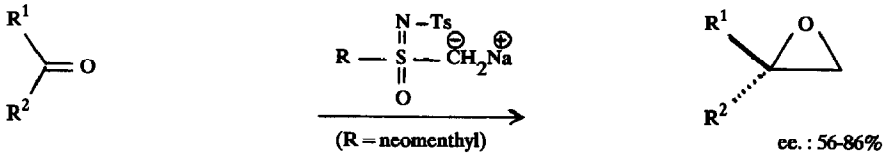


1d (1*S*, 2*S*)
2d (1*R*, 2*R*)
3d (1*R*, 2*S*)
4d (1*S*, 2*R*)

Tetrahedron: Asymmetry **1994**, *5*, 1513

Asymmetric Synthesis of Oxiranes from Carbonyl Compounds by Methylene Transfer Reaction using Chiral S-Methyl-S-neomenthyl-N- tosyl Sulfoximines

S.S. Taj and R. Soman, Malti-Chem Research Centre, Nandesari, Baroda-391340, India.

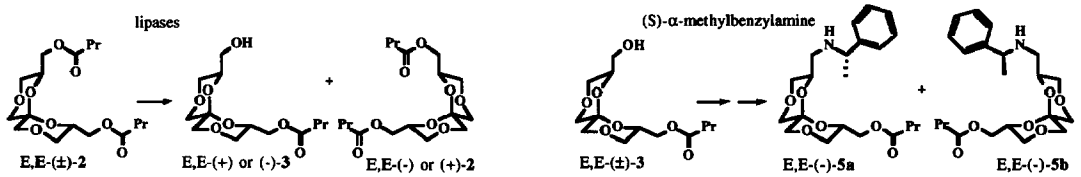


A new general procedure for the asymmetric synthesis of oxiranes is described.

Tetrahedron: Asymmetry **1994**, *5*, 1519

2- AND 8- FUNCTIONALIZED 1,4,7,10- TETRAOXASPIRO[5.5]UNDECANES. III. Resolution of (±)-E,E structure by enzymatic and chemical methods.

M. Lemaire, G. Jeminet, J.G. Gourcy, G. Dauphin Université Blaise Pascal, URA 485 du CNRS Laboratoire de chimie organique biologique, 63177 Aubière cedex, France.

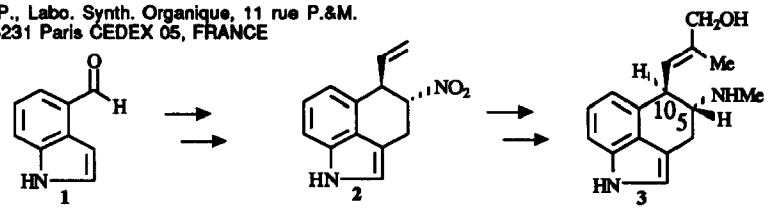


Tetrahedron: Asymmetry **1994**, *5*, 1525

SYNTHESIS OF (-) CHANOCLAVINE I

Nathalie KARDOS and Jean Pierre GENET

E.N.S.C.P., Labo. Synth. Organique, 11 rue P.&M. Curie, 75231 Paris CEDEX 05, FRANCE

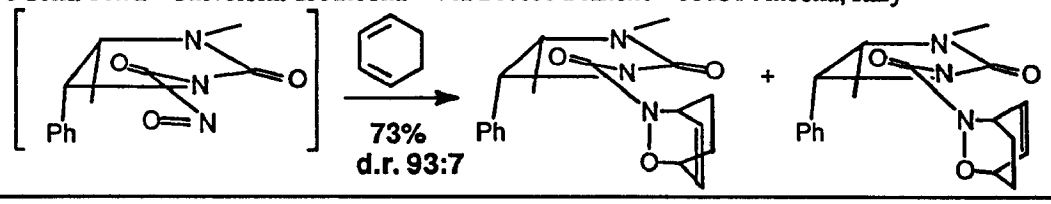


Total enantioselective synthesis of (-) chanoclavine I (3) in twelve steps from indole (2) carboxaldehyde (1) is described. The key step involves the creation of C_5 - C_{10} with chiral PdL* complexes : L* (S)-BINAP.

Tetrahedron: Asymmetry **1994**, *5*, 1535

Diastereoselective Hetero-Diels-Alder Cycloaddition of a C-Nitroso Compound Prepared Starting from a Homochiral Imidazolidin-2-one

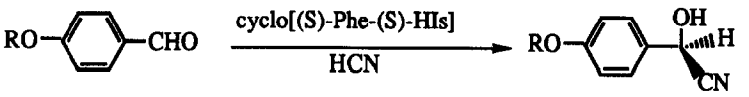
B. Cardillo, R. Galeazzi, G. Mobbili, M. Orena,* M. Rossetti – Dipartimento di Scienze dei Materiali e della Terra - Università di Ancona - Via Brecce Bianche - 60131 Ancona, Italy



Tetrahedron: Asymmetry **1994**, *5*, 1541

SUBSTITUENT EFFECTS ON THE ENANTIOSELECTIVE HYDROCYANATION OF ARYL ALDEHYDES

Hyun J. Kim and W. Roy Jackson*
Department of Chemistry, Monash University, Clayton,
Victoria, Australia, 3168.

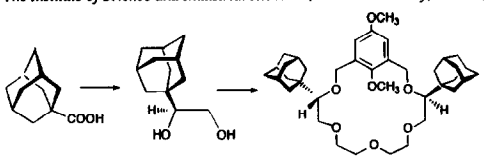


R = CH_2=$CHCH_2$ E.e. ≥ 98%

Tetrahedron: Asymmetry **1994**, *5*, 1549

Preparation of Homochiral Crown Ether containing (*S*)-1-(1-Adamantyl)ethane-1,2-diol as a Chiral Subunit and its Enantioselective Complexation with Organic Ammonium Cation

Koichiro Naemura,*[a] Takashi Mizo-oku,[a] Kimiko Kamada,[a] Keiji Hirose,[a] Yoshito Tobe,[a] Masami Sawada,[b] and Yoshio Takai[b]
Department of Chemistry, Faculty of Engineering Science, Osaka University, Toyonaka, Osaka 560[a] Japan
The Institute of Science and Industrial Research, Osaka University, Ibaraki, Osaka 567 Japan[b]



^{1}H n.m.r examination showed that the (*S,S*)-**18**-(*R*)-methionine methyl ester perchlorate complex was more stable than its diastereomer

Tetrahedron: Asymmetry **1994**, *5*, 1559

(*S*)-2-*tert*-Butyl-3-methylene-oxirane: Synthesis and Hydroboration of Chiral Allene Oxide

Toshiro Konoike*, Tetsuyoshi Hayashi and Yoshitaka Araki
Shionogi Research Laboratories, Shionogi & Co., Ltd., Fukushima-ku, Osaka 553, Japan

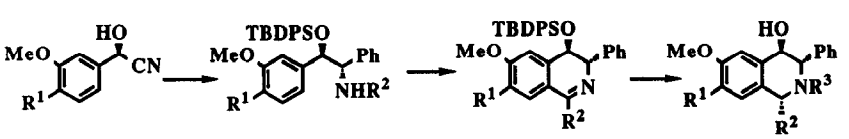
A chiral allene oxide was prepared via deoxystannylation of chiral epoxide. Its isolation and hydroboration giving chiral 1,3-diol were demonstrated.

Tetrahedron: Asymmetry **1994**, *5*, 1567

A SIMPLE ENZYMATIC SYNTHESIS OF (3S,4R)-(+)-4-HYDROXY--3-PHENYLTETRAHYDROISOQUINOLINES

Imanol Tellitu, M. Dolores Badía*, Esther Domínguez*, Francisco Javier García
Dpto. Química Orgánica, Facultad de Ciencias, Universidad del País Vasco (UPV/EHU), P.O. BOX 644 - 48080 Bilbao (Spain)

An efficient versatile method is presented for the stereospecific synthesis of (+)-4-hydroxy-3-phenyltetrahydroisoquinolines using (R)-arylcyanohydrins as the chiral starting material.

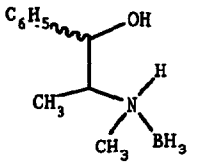


Tetrahedron: Asymmetry **1994,** *5,* 1579

Determination of the nitrogen configuration in ephedrine N-boranes and a study of their assisted stereospecific deuteration of NH.

H. Tlahuext, F. Santiesteban, E. García-Báez, R. Contreras*.
Depto de Química, CINVESTAV, IPN A.P. 14-740, 07000 México.

Ephedrine, *pseudo*ephedrine and *pseudo*ephedrine-methyl-ether give stereoselectively N→BH_3 adducts, which are N-epimers of stable configuration. The N-configuration was established from NMR data. Assisted stereospecific deuteration of NH was found. The analysis of the preferred conformers give us an explanation of the observed stereochemistry.

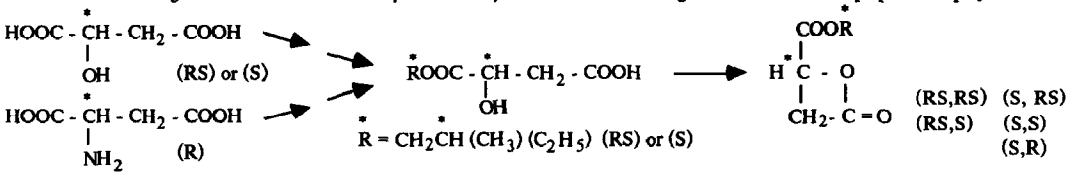


Tetrahedron: Asymmetry **1994,** *5,* 1589

4-Alkyloxycarbonyl-2-oxetanones with two stereogenic centers as precursors of malic acid alkyl esters polystereoisomers

S. Cammas[a], K. Boutault,[a] F. Huet,[b] Ph. Guérina[a]
[a] Labo. de Physico-Chimie des Biopolymères - UMR 27 - CNRS - BP 28 - 94320 Thiais - France.
[b] Labo. de Synthèse Organique, URA CNRS 482, Université du Maine, Avenue O. Messiaen, BP 535, 72017 Le Mans Cedex, France.

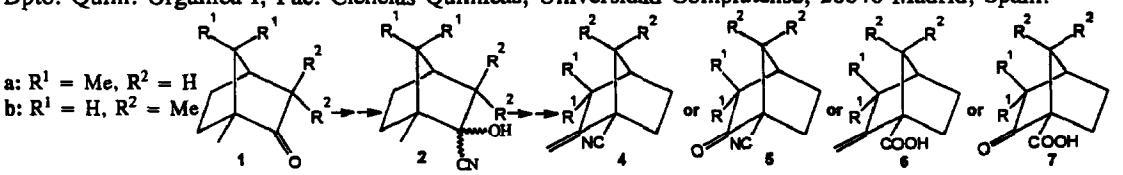
Stereoisomers with high enantiomeric excesses of a β-substituted-β-lactone with two stereogenic centers have been prepared and polymerized.



Tetrahedron: Asymmetry **1994,** *5,* 1599

A Facile Synthesis of Homochiral 1-Norbornanecarboxylic Acids and 1-Norbornanecarbonitriles

A. García Martínez, E. Teso Vilar, A. García Fraile, S. de la Moya Cerero, J. M. González-Fleitas de Diego, L.R. Subramanian
Dpto. Quím. Orgánica I, Fac. Ciencias Químicas, Universidad Complutense, 28040-Madrid, Spain.



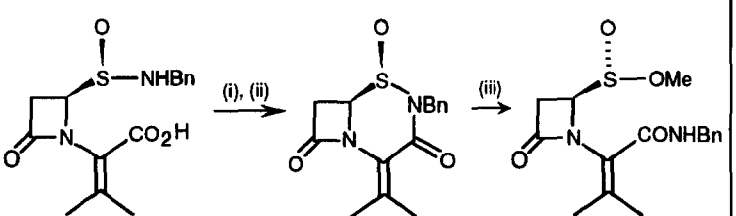
Tetrahedron: Asymmetry **1994,** *5,* 1605

SYNTHESIS, STRUCTURAL CHARACTERIZATION AND STEREOCONTROLLED DEGRADATION OF 2-AZACEPHAMS

Jure J. Herak, Mladen Vinković, Zorica Mandić, Irena Lukić, Mirjana Tomić, Miće Kovačević
PLIVA Research Institute, Prilaz baruna Filipovića 89, 41000 Zagreb, Croatia

Synthesis and ring opening of supstituted 2-azacepham with excellent regio and stereoselectivity were performed

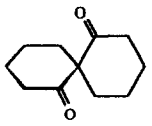
(i) EtOCOCl / Et_3N; (ii) Et_3N; (iii) MeOH



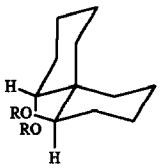
Synthesis and Resolution of the Enantiomeric *trans,trans*-Spiro[5.5]-undecane-1,7-diols and Determination of their Absolute Configuration; (*S*)-(–)-Spiro[5.5]undecane-1,7-dione

Tetrahedron: Asymmetry **1994,** *5,* 1613

R. Brünner and H. Gerlach
Laboratory of Organic Chemistry, University of Bayreuth, D-95440 Bayreuth, Germany



(*S*)-(–)-**1**



(1*S*,6*R*,7*S*)-(–)-**4** R = H

(–)-**6** R = (1*S*,4*R*)-camphanoyl

A Four-step, Highly Enantioselective Synthesis and Enzymatic Resolution of 3,4-dichloro-phenylalanine.

Tetrahedron: Asymmetry **1994,** *5,* 1621

Solladié-Cavallo A., Schwarz J. : Lab. de Stéréochimie Organométallique, EHIC,
1 rue B. Pascal, 67008 Strasbourg, France and *Burger V.* : Neosystem SA, 7 rue de Boulogne, 67500 Strasbourg, France.

(S)-3,4-Dichloro-phenylalanine hydrochloride 98.3% *S* is synthesized in 4 steps, 66% overall yield and with recovery of the chiral auxiliary, using our modified Yamada's method. The same compound, having about the same *S* enantiomeric purity, is also obtained in 32% yield through kinetic resolution of racemic ethyl N-acetyl-3,4-dichloro-phenlylalaninate with subtilisin A.